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SECOND SERIES VOL. IX, No. 10

BULLETIN

OF

THE NEW YORK ACADEMY OF MEDICINE

INCORPORATED 1851

OCTOBER, 1933

PUBLISHED MONTHLY BY

THE NEW YORK ACADEMY OF MEDICINE

2 East 103 Street

New York, N. Y.

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INQUIRIES INVITED

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WILLIAM BEAUMONT
1785-1853

From a hitherto unpublished daguerreotype, in possession of The New York Academy of Medicine, presented by Dr Irving Pardee. This photograph was in the possession of descendants of William Beaumont's brother, Abel Beaumont, of New London.

BULLETIN OF
THE NEW YORK
ACADEMY OF MEDICINE

VOL. IX OCTOBER, 1933 No. 10

STATED MEETING, OCTOBER 5, 1933

Celebration of the 100th Anniversary of the Publication of William Beaumont's "Experiments and Observations on the Gastric Juice and the Physiology of Digestion."

INTRODUCTORY REMARKS

BERNARD SACHS
(President, The New York Academy of Medicine)

The Fellows of The New York Academy of Medicine, although wholly devoted to the doctrine that medicine should transcend national boundaries, feel an intense pride in the great achievements of the American army surgeon, William Beaumont, and are happy to join in the celebration of the Centennial of the publication of that famous book entitled "Experiments and Observations on the Gastric Juices and Physiology of Digestion" published at Plattsburgh in 1833. Preparations for this celebration were entrusted to a special committee, of which Dr. Harris A. Houghton is the efficient chairman.

A study of Dr. Malloch's list of early and later Medical Americana will help us to recall on an occasion like this, the names of a few distinguished countrymen, whose work has been of fundamental importance in the progress of medical science: Ephraim McDowell, whose name will always be associated with the earliest ovarian operations;

William Thomas Green Morton and his discovery of ether anesthesia; John Stough Bobbs, also an army surgeon, who was responsible for the first removal of gallstones by operation; George Huntington and his famous description of the hereditary form of chorea; Reginald Fitz and Charles McBurney; S. Weir Mitchell, Joseph O'Dwyer, and many others of equal fame, not to forget such important contributions as were made in the early days by Oliver Wendell Holmes in his great essay on "The Contagiousness of Puerperal Fever"; Benjamin Franklin, Noah Webster, and other great Americans.

Among those who have left their imprint on the sands of time, the life history of William Beaumont is peculiarly fascinating, and in the short account that I am supposed to give of him, I wish to emphasize his character as a man, while the later speakers will do ample justice to the scientific attainments of the man whom Osler called the "Pioneer Physiologist of this Country".

He was born in the simplest sort of home at Lebanon, Connecticut, November 21st, 1785. Of his childhood little seems to be known, but in his 22nd year, he left the paternal roof to seek fortune and a name. His outfit consisted of a horse and cutter, a barrel of cider and $100 of hard-earned money.

We are told that from 1807 to 1810 he conducted a village school at Champlain, New York, studying during his leisure hours medical books from the library of Dr. Seth Pomeroy, his first patron.

In 1810 he went to St. Albans, Vermont, where he entered the office of Dr. Benjamin Chandler, and commenced a regular course of medical reading, following it for two years. At the end of this time, having fulfilled the prescribed apprenticeship, he was licensed on "the 2nd Tuesday of June, 1812" to practice medicine, by The Third Medical Society of the State of Vermont.

At the beginning of the War of 1812, he applied for an appointment in the United States Army, and was success-

ful. He was made Assistant Surgeon to the 6th Infantry and joined his regiment at Plattsburgh on September 3rd, 1812. At the conclusion of the war in 1815, when the Army was reduced in numbers, he was retained in service, but soon resigned.

From 1816 to 1820, he appears to have engaged in rather successful private practice in Plattsburgh. In 1820 he rejoined the service and was ordered to Fort Mackinac as post surgeon. It was there that he met his fate and his great opportunity in the person of a French-Canadian, Alexis St. Martin, who was wounded in the abdomen by the accidental discharge of a shotgun.

Imagine the unsettled conditions of that pioneer community and the sudden summons to duty of a young army surgeon. The unfortunate victim was not expected to survive the injury and so far as there was any luck in this matter, the fact that St. Martin survived may be attributed altogether to good fortune, but Beaumont realized at once the unusual opportunity presented to him, and in the most admirable and systematic way continued careful observations on the exact functions of the stomach.

It is of interest to us to read that before that day there was much uncertainty as to what the stomach actually did with the food once it had hold of it.

Beaumont's observations were not of the flippant order and for years he continued carefully the study of the gastric juices, and of the acid content of the stomach, that even to this day the text books on physiology have not been able to do better than to quote his original statements. Beaumont was possessed of the true scientific spirit, carefully postulating his problems, and repeating his observations again and again; in addition to the man of science, there was in him the man of sturdy character, who kept his patient constantly in mind, even to the extent of housing him and making an iron-clad contract with him so as to be certain to keep him within reach and observation. It is a

further testimonial to the man's scientific methods that although he began his observations in 1822, his first publication is dated 1833.

Beaumont did not have an easy time in keeping his eye on Alexis St. Martin. He had a way of disappearing from time to time, and was not altogether sober. He was a great asset, but also a great responsibility to the army surgeon.

During the period of his observations Beaumont was transferred from one post to another and always took St. Martin along with him. Finally in 1834 he was ordered to St. Louis where he remained in service until 1839.

When he resigned, he evidently devoted himself to private practice from that time on. It was unfortunate that Beaumont's brilliant career was terminated by an accident, that he died on April 25, 1853. His celebrated patient outlived him by many years and died in 1880.

Some of you may remember that when Alexis St. Martin died, William Osler made all sorts of efforts to obtain the famous stomach of the famous man, but I believe was not successful in this.

American Medicine and above all, our army surgeons, have reason to be proud of the fundamental researches and experiments so brilliantly and accurately described by William Beaumont. The adequate appreciation of this work I must leave to those who have been asked by the Committee to evaluate in the light of our present day knowledge, the great work that was done by this young army surgeon.

WILLIAM BEAUMONT AS AN ARMY OFFICER*

ROBERT U. PATTERSON
Surgeon General of the Army

I appreciate the courtesy you have extended to me this evening by giving me an opportunity to assist in doing honor to the memory of this great military surgeon and scientist by recounting the history of his career as a Medical Officer of the Army, and to be accorded the privilege of listening to the remarks upon his scientific achievements which will be made by others this evening. Without further delay I will then proceed to speak upon "William Beaumont as an Army Officer".

William Beaumont came of a family which had rendered military service in many a campaign. His father, Samuel Beaumont, had been a corporal in the Connecticut Militia in the American Revolution, and his uncles had also served.

Born just two years after American independence had been achieved, he grew up amid stories of the war, and his mind was filled with a desire to wear the uniform. After his apprenticeship in medicine to Dr. Benjamin Chandler, he was licensed to practice in Vermont in 1812, just as the clouds of the second war with Great Britain began to gather. He immediately seized the opportunity to put his medical training into practice and at the same time display his patriotism. From his home in Champlain, New York, he crossed the lake of that name to Plattsburgh, where a portion of the Army of the North under General Dearborne was encamped, and presented his credentials, consisting of his license to practice medicine and certificates attesting his skill and his "strict moral honesty and integrity". On September 13, 1812, he was received into the Army as a Surgeon's Mate, a rank that corresponded to Assistant Surgeon or what would today be a First Lieutenant. He was assigned to the "Sixth Regiment of Infantry on brevet

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* *Delivered at a Stated Meeting of the Academy, October 5, 1933, in honor of William Beaumont.*

from General Bloomfield". He was commissioned officially by President Madison on December 2, 1812, and on the twelfth of that month transferred to the Sixteenth Infantry. During this period of the war, there was very little activity on the part of this force, so that on January 1, 1813, he suspended duty for a time and began the private practice of medicine in Plattsburgh. This was a not unusual procedure, and illustrates the casual manner in which the War of 1812 was waged and the lack of interest manifested in some quarters. While out of the service some of his friends, the Chandlers at St. Albans, whom he visited, sought to prevent his returning to the army. But the desire for the military life proved too strong, and with the prospects of early engagements with the enemy, he returned tc the service, and was transferred again on February 15, 1813, to the Sixth Regiment of Infantry.

Within a few weeks orders were received by this regiment to march to Sacketts Harbor to embark for a point unknown. On March 10th he wrote to his friend Dr. Chandler, in part:

"We have this day received orders to repair to Sacketts Harbor with all possible dispatch. We start on Saturday next, expecting to join 8,000 at that place, where doubtless we shall have an obstinate battle . . . I am again in the U. S. Service. I have not time to state particular reasons, but honor and gratitude to the officers for the friendly assistance in procuring the appointment, together with their anxious solicitude for me to continue with them, was one cause of my resuming my former station."

His regiment arrived at Sacketts Harbor on March 27th, and on April 13th he again wrote to Dr. Chandler:

"The regular force at this place is not so great as common report would have it. There are about 5,000 soldiers, sailors, and marines, exclusive of the Second Brigade, which arrived a few days since in the adjacent Towns of Brownville and Watertown, eight or ten miles distance. The Jesus-stealer, or Old Rifle's regiment, has not yet come

on. General Chandler takes the command, no other being present; General Wilkinson is expected to take the command of the Northern Army, and Colonel Pike is promoted to brigadier-general. An attack on Kingston is pretty certain as soon as the lake opens. The troops are all very healthy. I have but three or four sick in my regiment; have lost none on the march, nor since we arrived, tho' our situation is miserable. We are encamped where the mud and water have been over shoe in every direction, in open huts, without any straw, or more than our blankets to cover us. No new or strange disease has occurred since I saw you. No peculiar treatment is required to save the men; the old Brunonian practice, a little varied and changed into the Chandlerian, succeeds almost to a miracle. I have no remarks worthy of communicating, having had no very singular cases. Yesterday we shot a soldier of the marine corps for desertion; we could not obtain the privilege of dissecting him. Next Thursday another is to be shot."

We are fortunate in having Beaumont's diary of the period of his service in the war of 1812, so that full information as to his movements is available. Here are two entries:

APRIL 27, 1813:

"27th. Sailed into harbor (Kingston) and came to anchor a little below the British Garrison. We now filled the boats and effected a landing, though not without some difficulty and the loss of some men. The British marched their troops from the Garrison down the (hill) to cut us off in landing, and then they had every advantage. They could not affect their (plan). A hot engagement ensued, in which the enemy lost nearly a third of their men and were soon compelled to quit the field, leaving their dead and wounded strewed in every direction. We lost but very few in the engagement. The enemy returned into Garrison, but from the loss sustained in the 1st engagement, the undaunted courage of our men, and the brisk firing from our fleet into the Garrison with 12- and 32-pounders, they

were soon obliged to evacuate it and retreat with all possible speed. Driven to this alternative, they devised the inhuman project of blowing up their Magazine (containing 300 Bbls. powder), the explosion of which, shocking to mention, had almost totally destroyed our Army. Above 300 were wounded, and almost 60 killed dead on the spot by stones of all dimensions falling like a shower of hail in the midst of our ranks. The enemy had about 20 killed and wounded by the explosion, tho the main body had retreated far out of the Garrison. After this sad disaster our Army marched into the Garrison, hawled down the British coat of arms (which they were too haughty to do), and raised the American Standard on its place. Our Army was about 1,500 strong—Theirs about the same. Encampt in Garrison this night, mounting a guard 500 strong to secure our safety through the night. A most distressing scene ensues in the Hospital—nothing but the Groans of the wounded and agonies of the Dying are to be heard. The Surgeons wading in blood, cutting off arms, legs, and trepanning heads to rescue their fellow creatures from untimely deaths. To hear the poor creatures crying, "Oh, Dear! Oh, Dear! Oh, my God, my God! Do, Doctor, Doctor! Do cut off my leg, my arm, my head to relieve me from misery! I can't live, I can't live!" would have rent the heart of steel, and shocked the sensibility of the most hardened assassin and the cruelest savage. It awoke my liveliest sympathy, and I cut and slashed for 48 hours without food or sleep. My God! Who can think of the shocking scene when his fellow-creatures lie mashed and mangled in every part, with a leg, an arm, a head, or a body ground in pieces, without having his very heart pained with the acutest sensibility and his blood chill in his veins. Then, who can behold it without agonizing sympathy!"

MAY 27TH, 1813:

"27th. Embarked at break of day. Col. Scott, with 800 men for the advance Guard, supported by the first Brigade, comd. by Genl. Boyd, moved in concert with the shipping to the enemy's shore and landed under the enemy's Battery

and in front of their fire, under cover of our shipping, with surprising success, not losing more than 30 men in the engagement, tho the enemy's whole force was placed in the most advantageous situation possible. Notwithstanding, we routed them from their mounted and chosen spot, and drove them out of the country. Took possession of the Town (Newark) and Garrison. Killed of the British, rising 100; wounded, rising 200; prisoners, 100."

The Colonel Scott mentioned by Beaumont was Winfield Scott, later to become commander-in-chief of the Army (1841) and distinguish himself in the Mexican War, and known affectionately to his men as "Old Fuss and Feathers".

In another pocket volume, Beaumont kept an account of his medical and surgical labors. He tells us that at Sacketts Harbor the "type of disease was Intermittant, in many cases complicated with Peripneumony", for which he prescribed that popular old remedy, tartar emetic. There were throughout the campaign many cases of "dysentaries and diarrhoeas" and some cases of "Typhus", or as we should say, typhoid fever.

During his service at this time Beaumont himself was stricken with illness and was for some time—how long we do not know—under treatment at Fort George.

In August, 1814, he took part in the battle of Plattsburgh under General Macomb—the Adjutant General of the Army who took the field—and who with 7,500 men and a fleet of fourteen vessels, defeated General George Prevost with 14,000 men and sixteen vessels. This victory at Plattsburgh Bay helped to turn the tide of battle in favor of the land forces. Macomb was promoted Major General. In commenting on the work of the medical officers during the battle, James Mann, medical director at Plattsburgh, laments the failure to give proper credit for the bravery of these officers under fire while attending the wounded. While, he said, he could not discriminate in his praise of these officers, he mentions Beaumont as one of five who "have deserved well of their government".

In December, 1814, the Treaty of Ghent ended the war, and Beaumont contemplated a return to civil life. With the reduction of the strength of the army to 10,000, it became necessary to drop many officers. But on the basis of merit Beaumont was retained in May, 1815 with the Sixth Infantry, though hundreds higher in rank and older in service were dropped.

Of Beaumont's personal courage there can be no question. He was nearly involved in a duel with Captain Richards of the Artillery Corps, and indeed sent Richards a challenge, but the matter was smoothed over by mutual friends without bloodshed.

Though he had been retained in the service, Beaumont decided to resign because of insufficient prospect of advancement. He entered private practice with Dr. G. Senter, another famous old army surgeon. But like many officers who have once come to love military life, he was not satisfied out of uniform. In 1818 the newly appointed Surgeon General Lovell, an old friend, offered him a clerkship in the Surgeon General's Office, but though he at first accepted he later declined, as the salary was but $1000 per year. He did, however, accept a commission as Surgeon in the New York Militia on April 6, 1819, at the request of Governor Clinton, whom Beaumont as a staunch Federalist, greatly admired.

He again entered the regular army on March 18, 1820, being commissioned Surgeon by President Monroe, with rank from December 4, 1819. He was immediately ordered to Fort Mackinac on the northwestern frontier, where he reported once more to General Macomb, under whom he had served at Plattsburgh.

His diary gives an interesting account of his journey to his new station and a detailed description of the Fort. He took up his duties as a medical officer, looking after the small one-story frame hospital. Here it was that he was called in to treat the accidental gunshot wound of the young Alexis St. Martin, and his researches with this patient—

"that old fistulous Alexis", as Osler calls him, are known to every student of physiology. I shall not attempt an account of them here.

He felt greatly hampered in his work at Mackinac, for there was no one to consult as to his work, there being no doctor within the radius of several hundred miles, and of course nothing even remotely resembling what we would call "laboratory facilities". He probably asked for a transfer to some eastern post, for a letter to him from the Surgeon General's Office, dated February 2, 1825, informed him that he would be ordered to Ft. Niagara. But by May the order had been revoked as the contemplated troop movement had been cancelled, and he resolutely continued his work at Mackinac. In June, however, to his joy he was transferred to Ft. Niagara and there he continued his experiments. Obtaining a leave of absence in July, he took his patient to Burlington, Vermont, and to Plattsburgh to exhibit him to physicians there. Here it was that St. Martin took "French leave", leaving Beaumont broken-hearted over his loss.

Early in 1826 Beaumont was transferred, accompanying troops, to Green Bay, Michigan Territory, where he was called upon to perform the same type of duty as at Mackinac. Here he saw active service against hostile Indians under Chief Red Bird, and was present with Major Whistler when Red Bird surrendered. Beaumont's duties took him to Fort Howard, and later to Fort Crawford, both in Michigan Territory, taking station at the latter on August 10, 1826.

At Fort Crawford, Prairie du Chien, Upper Mississippi, Beaumont recommenced his studies of the truant St. Martin, whom he had located and brought at his own not inconsiderable expense, to his post. Beaumont had begun to receive recognition for his work, and in May, 1831 was given permission to visit Europe for a year for study. But before he could leave, the order was rescinded. The beginning of the Black Hawk War in that year was the probable cause for Beaumont's retention in the United States.

During this period he had not only further experience with Indian warfare, but also with a still more terrible enemy. A wide-spread epidemic of cholera broke out. Beaumont's studies of it were published. The Black Hawk War was often called the "cholera campaign".

In August, 1832, Colonel Zachary Taylor, then in command of Fort Crawford, acting on War Department authority, gave Beaumont leave of six months for the purpose of visiting Europe. After visiting his home Beaumont went to Washington where he abandoned any idea of going to Europe, thinking that the time that would be available in Europe on but a six months furlough would be insufficient to accomplish anything. He accordingly spent his furlough in America, at its expiration being ordered to New York City, later being sent to Plattsburgh for recruiting duty.

In December, 1832, a way was found to help hold the elusive St. Martin, who continued to "escape" from time to time despite his promises to Beaumont. He was enlisted as a sergeant in the army. But as we know, even this did not hold Alexis.

In January, 1834, Beaumont's station was transferred to Jefferson Barracks, some twelve miles below St. Louis, but later he was sent to St. Louis Arsenal, where he was permitted to live in the city and engage in private practice, which soon became large and lucrative. In 1836 Surgeon General Lovell, Beaumont's good friend and supporter, died, and his successor, Surgeon General Lawson, was less inclined to grant him special privileges. It was rumored that he was to be transferred to Jefferson Barracks again, with consequent inability to practice in St. Louis. His friends among officers of the line, including Major Robert E. Lee and Major Ethan Allen Hitchcock, praised his work highly as did also the Missouri senators.

It must be admitted that Beaumont was lacking in tact, and the forceful language that he did not hesitate to use, even when addressing the President of the United States,

did not help his cause. The blow finally fell. General Order No. 48, dated September 18, 1839, assigned him to a board of officers to convene on November 15th following at Fort Brooks, Florida. Beaumont sought at once to resign, and though at first his resignation was refused until he had complied with the order, it was at length accepted on January 20, 1840. Beaumont made the further mistake of seeking reinstatement by direct appeal to President Van Buren, and in his letter characterized the Surgeon General as one whose capacity was zero. His friends Hitchcock and Lee in vain tried to restrain him. His desire to reenter the army came to naught.

So ended the military career of one of the most noted medical officers who has worn our uniform. The remainder of his life was that of a private physician in St. Louis, where he died on April 25, 1853.

General Order No. 40, War Department, June 26, 1920, announced that "the new hospital constructed on the military reservation at El Paso, Texas, will be known as the 'William Beaumont General Hospital' in honor of Major William Beaumont, surgeon U. S. Army (born 1785; died 1853), who during his service as a medical officer of the Army conducted epoch-making investigations of the physiology of digestion, and, as a result of his researches became the leading physiologist of the country and the first to make an important and enduring contribution to that science".

A final word. Osler himself planned to secure St. Martin's stomach for the Army Medical Museum, but when that celebrated patient died in 1880, an old man and the father of twenty children, Osler received a telegram: "Don't come for autopsy; will be killed", and St. Martin's neighbors guarded his grave by night.

I have here photostat copies of the old one-story frame hospital at Fort Mackinac to which Alexis St. Martin was removed when wounded and where he lay during his convalescence; a picture of Fort Michillimackinac in mid-

winter showing one of the block houses with the surgeon's quarters and hospital to the left of it; a picture of Beaumont's first commission as a surgeon's mate signed by President James Madison December 2, 1812; and a picture of his commission as a post surgeon of the army, signed by James Madison, effective from December 4, 1819. I will pass these around among the audience. I thank you for your kind attention.

THE BEAUMONT-ST. MARTIN CONTRACT AND THE DESCENDANTS OF DR. BEAUMONT*

HARRIS A. HOUGHTON
(Chairman, Beaumont Celebration Committee)

Obviously, a most unique contract, from the viewpoints of both medicine and law, was that one which was entered into October 16, 1832, between William Beaumont, Surgeon in the Army of the United States of America, of the one part, and Alexis St. Martin, Laborer, of Berthier, Province of Lower Canada, of the other part. You will remember that St. Martin, who was in his late twenties, had justly earned the reputation of being a most undependable person, at least in Dr. Beaumont's estimation, and that this idea of having a contract was probably born of a desire on the part of the Doctor to produce a psychological effect on St. Martin's acquisitive and puerile mentality. Certainly, there was no way to enforce its terms on St. Martin, except in those measures which may have been provided by law for the punishment of run-away indentured servants.

In September, 1832, Beaumont returned to Plattsburgh from the west with his family. For once, Alexis promptly appeared from his Canadian home according to promise. The contract was drawn up and signed as stated, and the third series of experiments followed.

**Delivered at a Stated Meeting of the Academy, October 5, 1933, in honor of William Beaumont.*

Of the instrument itself, there are apparently two parts. The first appears to be the standard form used in legal circles for the binding of indentured servants, holding good for one year. It need not be repeated here. The second part immediately follows:

"And the said Alexis, for the consideration hereinafter mentioned, further especially covenants and agrees with said William, that he, the said Alexis, will at all times during said term, when thereto directed or required by said William, submit to, assist and promote by all means in his power, such Physiological or Medical experiments, as the said William shall direct or cause to be made on or in the stomach of him, the said Alexis, either through or by the means of, the aperture or opening thereto in the side of him, the said Alexis, or otherwise, and will obey, suffer and comply with all reasonable and proper orders or experiments of the said William, in relation thereto, and in relation to the exhibiting and showing of his said Stomach, and the powers and properties thereof, and of the appurtenances and powers, properties, situation and state of the contents thereof. It being intended and understood both by said William and said Alexis that the facilities and means afforded by the wounds of the said Alexis in his side and stomach shall be reasonably and properly used and exhibited at all times upon the request or direction of said William for the purpose of science and scientific improvements, the furtherance of knowledge in regard to the power, properties and capacity of the human Stomach."

The final paragraph of the instrument relates to the compensation, viz., $150.00 for the year's service and "found."

This remarkable document was written by a Plattsburgh attorney, Jonathan Douglas Woodward, by name, and in its original form as preserved in the Library of the Washington University Medical School, St. Louis, it is in Woodward's handwriting. A photostat copy will be found in the exhibit. Attorney Woodward signed as a witness, and again signed Alexis St. Martin's name, who in turn gave his approval by making his mark. Both participating parties

were then sworn by Attorney Woodward as a notary, and the proper certification follows.

The moral effect of this contract lasted three months, when Alexis St. Martin was inducted into the army at Washington as a sergeant, and became amenable to martial law.

The name of Jonathan Douglas Woodward furnishes us with practically the only living connecting link with the times of which we have been speaking and the present. Attorney Woodward's daughter, Miss Helen D. Woodward, now lives in Plattsburgh, N. Y., a charming woman, ninety-two years of age. She was a graduate of Vassar College in the first class to receive degrees from that institution in 1867, and afterwards became principal of the Junior High School in Plattsburgh, a position which she held for many years. Consequently nearly everyone in Plattsburgh is familiar with her tall erect figure, her beautiful white hair, her dignified and kindly face. Her health is still good for one of her age, and she has extended her greetings to us to-night in a letter which will be found in the exhibit.

We are fortunate, in having here a long-standing friend of Miss Woodward's, namely, Mrs. George H. Tuttle, the only woman to occupy a seat on this platform. Although of Boston birth and youth, she lived her married life in Plattsburgh, and became much interested in the rich history of the Champlain Valley. She has written a comprehensive, authoritative work in this field, has been a Regent of the Daughters of the War of 1812, and was for many years, Curator of the Kent-Delord Museum in Plattsburgh. Particular consideration is accorded to Mrs. Tuttle to-night because you will find that Dr. Jesse Myer in writing the biography of Dr. Beaumont was careful to give her much deserved recognition for a large amount of work which she did for Dr. Myer in collecting original material for that book. Mrs. Tuttle has given of her time and energy much to your present Committee, and we desire to thank her for this service.

A word concerning Dr. Beaumont's descendants might with propriety be included here. Of three children who achieved maturity, only one, Israel Green Beaumont (named from his mother's father) left children. Mrs. Keim, a sister mentioned several times in Dr. Myer's biography, though living in St. Louis in 1912 when his book was published, is now dead. She died without issue and no descendants of Dr. Beaumont are now living in St. Louis. Of Israel Green Beaumont's children, there were six, who reached maturity. The Misses May and Sophie Beaumont, spinsters on the twilight side of 50 years, now live near Green Bay, Wis., presumably on land which their grandfather purchased when he was post surgeon at Fort Howard. They own a few relics of Dr. Beaumont, a daguerreotype portrait, a painted portrait of the "incomparable" Deborah Beaumont, which is companion picture to that painting reproduced on the souvenir programs to-night. A signed letter of greeting and congratulation from the Misses Beaumont will be found in the exhibit. You are familiar with the fact that Dr. Beaumont's papers were given to the Library of Washington University, St. Louis, by Mrs. Keim, of which institution he was one of the founders, and they form a permanent exhibit there. A sister, Julia, married one, W. N. Cummings and had five children. This family resides in California. Ethan Allen Beaumont married and had two daughters. One married a "Brown" and the other, May, married one "Brotherton." The name of William Beaumont is perpetuated in this family. I am uninformed as to their residence.

The historical records of the Academy have been immeasurably enriched this week, by a gift from Dr. Irving Pardee. The two items consist of a daguerreotype of Dr. Beaumont, which hitherto was not known to exist, and an original letter written by Dr. Beaumont in 1826 to his brother Abel Beaumont who resided in New London, Conn. Both will be found in the exhibit.

THE BOOK OF WILLIAM BEAUMONT AFTER ONE HUNDRED YEARS*

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GEORGE HIGGINSON
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We have met together this evening to commemorate, not the birth or death of a great man, but the hundredth anniversary of the publication of a book. That book, which appeared in the fall of 1833, had no preparatory acclaim, it was not featured in extensive advertising, it was a modest octavo volume, printed in a newspaper office in the small town of Plattsburgh, bound in pasteboard, and sold by subscription. Certainly this was not a promising start. And yet, five years later the book was reprinted in an English edition, nine years later still (in 1847) a second American edition was brought out, and meanwhile, in 1834, a German translation had been published in Leipzig. In 1929, when the thirteenth International Congress of Physiology was held in Boston, the Federation of American Societies of Experimental Biology, which on that occasion acted as hosts to visiting physiologists, biochemists and pharmacologists from all parts of the world, memorialized Dr. Beaumont in a medal and presented to the members of the Congress a facsimile reproduction of Beaumont's famous volume.**

In the period between 1833 and 1933 thousands of other books have been written and published, have had their brief day and ceased to be. What was there in Beaumont's writing that endowed it with vitality and permanent value? It possessed those qualities because it embodied the simple, straightforward report of a scrupulously honest man who used his senses cautiously in a significant scientific enquiry, who recorded exactly how he used them and what they re-

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*Delivered at the Stated Meeting of the Academy, October 5, 1933, in honor of William Beaumont.

**It is worthy of note that Dr. John F. Fulton, Professor of Physiology in the Yale School of Medicine, permitted his copy of the first edition of Beaumont's classic to be cut apart for the zincograph process involved in the exact reproduction of the original pages.

vealed, and who drew limited inferences from the observed facts. He had, to be sure, an unusual condition to study and describe—a human being with a direct opening into the stomach on the left side of the body, through which instruments and food could be introduced and through which also the gastric contents and the digestive juice could be extracted. The willful, bibulous, and at times probably patient, Alexis St. Martin was not, however, the first person who had a gastric fistula. Myer[1], in his biography of Beaumont, cites an impressive number of such cases which had been noted in medical literature before 1830. In none of them had there been a man at hand who had the interest, the sense of value and the persistence that William Beaumont manifested during the years of his investigation.

The conditions which surrounded him were in many respects highly unfavorable both to the prosecution of research and to the securing of satisfactory results. It was at a frontier army post on the Island of Machilimacinac, near the union of Lake Michigan and Lake Huron, that the young Canadian hunter, Alexis St. Martin, received the gun shot which fractured ribs and made openings into the cavities of the chest and abdomen. Portions of the lungs and stomach, much lacerated and burnt, protruded through the openings, making, according to the record, "an appalling and hopeless case." The life of the wounded man was despaired of, but, by careful attention and treatment, and, no doubt in part because of his own youthful vigor, he recovered, in about ten months, sufficiently to promise ultimate survival. Even at that time, however, he was "altogether miserable and helpless," and since no one else would look after his needs, Beaumont took him into his own home and "medically and surgically treated and sustained him, at much inconvenience and expense, for nearly two years, dressing his wounds daily, and for a considerable part of the time twice a day, nursed him, fed him, clothed him, lodged him and furnished him with such necessities and comforts as his conditions and sufferings required" (1, p. 213).

The opportunity for making the "experiments and observations" was obviously not one that was presented ready for use but was the consequence of persistent and exacting professional skill and of humane consideration for a desperately injured man. Toward the end of the long and tedious convalescence the unique chance of studying "the gastric fluids and the process of digestion" in a normal human being became apparent. And in August, 1825, Beaumont made a few tentative observations (he records only four) on gastric temperature and the changes in beef and chicken as they occurred in the stomach and in glass vials containing extracted gastric juice. He was not able to continue these observations, however, because St. Martin, ungrateful to the physician who had saved his life, took what may be called "Canadian French leave," and returned to his home near Montreal. There he married and though employed by the Hudson Bay Company managed to support his wife and children only in miserable poverty. Meanwhile Beaumont had urged friends in the American Fur Company to be on the lookout for the missing man and had spent sums from his own meagre income as an army surgeon to obtain trace of him. After St. Martin's whereabouts were discovered, in 1827, two more years passed before he was persuaded, with "considerable difficulty and at great expense to his benefactor" to make the journey of nearly two thousand miles with his family from their Canadian home to Fort Crawford, on the Mississippi River, in Michigan Territory, the city where Prairie du Chien*, Wisconsin, now stands and where Beaumont was then stationed.

Old Fort Crawford was built on the flood plain of the Mississippi just above the point where the Wisconsin River contributes its waters—a flat stretch of land below the limestone bluffs, that had long been a natural center of

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*"Chien" pronounced "sheen." When the troops left the settlement in 1856 the local newspaper printed the lines:

"The like o' them may never be seen
By boys or men in Prairie du Chien."

intercourse and barter for the Indian tribes of the region and which became naturally a convenient meeting place for Indians and traders at a later day. The place witnessed in a typical fashion all stages of the advance of the American frontier. As Mahan[2] has written, in his entertaining story of the Fort, Prairie du Chien "was a focal point in an area where a colorful pageant of the Middle West unfolded —the coming of the French, the supremacy of the English, ... the establishment of military posts by the United States, and the founding of American communities. Indians, French explorers, missionaries, traders, trappers, *voyageurs* and *coureurs des bois,* Englishmen, Spaniards, Americans, miners, frontier soldiers and settlers were the characters in this struggle of nations for the wealth of the Upper Mississippi Valley—fur and lead and homes." In 1825, hundreds of representatives of the various Indian tribes, all arrayed in their picturesque devices of decorative feathers, quills and horse hair, and carrying their painted war clubs and drums, met on the Prairie in what has been called one of the most imposing councils ever held between the whites and the red men. Here was the very edge of our civilization. To this straggling frontier village, with its nondescript population of Indians, Frenchmen, half-breeds, and a few American settlers, Dr. Beaumont brought his family in 1826. There Alexis St. Martin came three years later, and there he and his family remained in Beaumont's employ from August, 1829 to March, 1831—a period marked by turbulence and anxiety because of the restlessness of the hostile Indian tribes.

I have described the conditions at Prairie du Chien and at Old Fort Crawford in order that the unpropitious background of circumstance in which Beaumont carried on his physiological studies may be understood. In an environment where the very words "scholarship" and "research" would not be comprehended, with none of the opportunities for conference and sympathetic discussion with fellow-workers that we call "atmosphere," indeed, with no scientific companions; with no library, no journals, no possibilities of consulting experts in any difficulty; and with no

laboratory equipment except a thermometer, a few vials, and a sand bath, he carried on a series of observations on the gastric juice and the gastric digestive process which during the hundred years that have elapsed since then have not failed to call forth the admiration of all who have read his record. He was a frontiersman in a new realm of intellectual interest, while surrounded by the most grim and forbidding environment of a frontier of civilization. And because, as he wrote, he conducted his investigations in "the true spirit of enquiry," without any "particular hypothesis to support," and because he "honestly recorded the result of each experiment exactly as it occurred," his observations have been a permanent monument to his devoted labor.

During the winter of 1832-33 Beaumont was given a six-months' furlough which he spent in Washington. There he had opportunity to consult the writings of other men who had studied and thought about the functions of the stomach—an opportunity which he used in part to make an elaborate and detailed summary of previous literature, with comments based on his own experience. There also he conducted a third series of experiments on St. Martin. After a period of service in this city of New York during the spring of 1833, he was, in July, transferred to Plattsburgh, where he made more observations (a fourth series). Although the third and fourth series were carried on under more favorable circumstances than those prevailing at the frontier army post in the wilds of Michigan territory, the methods employed were those which he developed there and the results obtained were in large degree confirmatory of the earlier results. It was at Old Fort Crawford, surrounded by savages and rough pioneers, that Beaumont laid the foundation for both of his later studies.

In the quiet of Plattsburgh during the summer of 1833, the book, "Experiments and Observations on the Gastric Juice and the Physiology of Digestion," was prepared for publication. Beaumont confessed that he found it "an immense job"—like many another investigator when he

has come to the task of describing what he has done and what he has discovered. In the autumn of that year, almost exactly a century ago, the first copies of the volume appeared and began to be distributed.

I have suggested earlier that the reason for the permanent value of Beaumont's book lies in the straightforward recording of observed facts. That aspect of his contribution to medical science he himself emphasized. And that aspect was stressed also by Sir Andrew Combe, the Edinburgh physiologist, who sponsored the English edition of the book, which was published in 1838.

"Among the disciplined physiologists of Europe," Combe wrote, "a more systematic experimenter might certainly have been found, but in Dr. Beaumont's instance the absence of systematized inquiry—made too generally in support of preconceived theory, and therefore apt to mislead as well as instruct—is more than compensated by the implicit reliance which one feels can be placed on the accuracy and candor of his statements. Having no theory to support, and no favorite point to establish, Dr. Beaumont tells plainly what he saw, and leaves everyone to draw his own inferences; or, where he lays down conclusions, he does so with a degree of modesty and fairness of which few persons in his circumstances would have been capable."

This judgment, though discriminating, does not, I think, sufficiently stress Beaumont's boldness and independence when he was convinced of the correctness of his facts and the reasonableness of the inferences to be drawn from them. Consider, for example, his discussions of thirst. In 1833, Magendie was one of the foremost physiologists of the world. He had written that "thirst is an internal sensation, and instinctive sentiment," "the result of organization, and does not admit of any explanation." Beaumont, "a mere tyro in science," "a simple experimenter," as he modestly called himself, utterly rejected the limitation which the renowned physiologist had laid down. "Thirst is no more an instinctive sentiment," he declared, "than any other sensation of the economy; to say it is the result of organization gives no explanation, amounts to nothing, and is certainly, to say the least, a very unsatisfactory way of disposing of the question" (3, p. 61). And in the face of the edict that

thirst is inexplicable, Beaumont suggested that it is a sensation arising from the mouth and fauces, a feeling of dryness due to evaporation of moisture from the surfaces of those regions, because the respired air passing to and fro over them takes up the moisture faster than it can be supplied. In attributing thirst to a local source at the back of the buccal cavity the backwoods physiologist was, according to modern evidence, on sounder ground than Magendie's successor, the eminent French savant, Claude Bernard, who regarded it as a "general sensation."

And consider Beaumont's comments on the nature of hunger—another example of his clear thinking and self-reliance. With reference to the statement that hunger is produced by action of the nervous system and has no other seat than that system, he affirmed, "I cannot perceive that such explanations bring the mind to any satisfactory understanding of the subject. In such a broad proposition it is difficult to ascertain the exact meaning. If the design is to convey the impression that hunger has no 'local habitation'; that it is an impression affecting all the nerves of the system in the same manner, then the sensation would be as likely to be referred to one organ as another." Furthermore, he argued against certain explanations of the local gastric source of the hunger pang. It is not due to the friction of the internal coats of the stomach for three different reasons which he advanced; nor due to irritation of a quantity of gastric juice in the stomach for it is not there; nor to the "energetic state of the gastric nerves" as had been suggested, for that is unexplored territory; nor to the "foresight of the vital principle," a phrase which, at a time when Johannes Müller was supporting vitalism, Beaumont declared "means anything, everything or nothing, according to the construction which each one may put upon it" (3, p. 55). These frank, incisive comments give relish even as one reads them today. "Such explanations," in his opinion, "conduce nothing to the promotion of science. They are mere sounds and words, which ingeniously convey a tacit acknowledgment of the author's

ignorance." Beaumont reasoned that the sensation of hunger must have its source in the stomach itself—a view which is supported by modern evidence. And he carefully recorded (3, p. 208) that when food was introduced through St. Martin's fistula the sensation of hunger immediately disappeared and therewith "stopped the borborygmus, or croaking noise, caused by the motion of air in the stomach and intestines, peculiar to him since the wound, and almost always observed when the stomach is empty." The result of this experiment was cited to indicate that the sensation of hunger originates in the stomach, but the further inference was not drawn that the "croaking noise" could only be due to a vibration of air forced by muscular pressure through a narrow orifice. If that step had been taken, the present explanation of hunger as a result of strong contractions or spasm of the gastric musculature would have long been anticipated.

Equipped, then, with a true appreciation of the opportunity which chance had offered him, with enthusiastic persistence in his quest, with shrewd and critical powers of observation, with sincere purpose to record accurately what his experiments revealed, with a high degree of independence and self-reliance in his judgment—and with little else—Beaumont pursued his studies, when his duties as army surgeon did not interfere, during the years 1829-1833. At the end of his book he listed fifty-one "inferences" from his tests and experiments. A few of these inferences have been superseded because they were not in accord with results obtained later under more favorable conditions; some of the inferences anticipated in a remarkable manner facts proved by quite modern investigations; and many of them have been confirmed and incorporated in the general body of physiological and clinical knowledge. It will not be possible here to consider in detail all these aspects of Beaumont's contributions. We must restrict our attention to relatively few of them, and in doing so it would be well for us to keep in mind the words of Meek[4]:

"One must remember the scientific condition of his times. . . . When Beaumont was working at Old Fort Crawford there was no such science as organized physiology. Ludwig, Helmholtz and Bernard, the great masters of this medical field, were boys of five, ten and eighteen years. Hoppe-Seiler was five years old, and Kühne and Emil Fischer were yet unborn. Beaumont never heard such terms as 'protein,' 'enzyme,' 'calories' or 'vitamines'."

Problems of importance at the time centered on the nature of gastric juice. There was still discussion concerning its acidity and its action as digestive agent. Beaumont took part in settling these questions. In 1824, Prout had shown that during digestion the juice contains hydrochloric acid—a discovery made independently by Tiedeman and Gmelin and reported in 1826. Beaumont's observations in 1825 proved that the human juice is a very active solvent; and in the samples which he submitted to Dunglison and Silliman for analysis an amount of hydrochloric acid was found which was surprisingly large. The description of gastric juice which Beaumont presented in his book is an excellent example of simple, clear statement:

"Pure gastric juice," he wrote, "when taken out of the stomach of a healthy adult, unmixed with any other fluid, save a portion of the mucus of the stomach with which it is most commonly and perhaps always combined, is a clear, transparent fluid; inodorous; a little saltish, and very perceptibly acid. Its taste, when applied to the tongue, is similar to thin mucilaginous water, slightly acidulated with muriatic acid. It is readily diffusible in water, wine or spirits; slightly effervesces with alkalis; and is an effectual solvent of the *materia alimentaria.* It possesses the property of coagulating albumen, in an eminent degree; is powerfully antiseptic, checking the putrefaction of meat; and effectually restorative of healthy action, when applied to old, foetid sores, and foul, ulcerating surfaces" (3, p. 84).

That is a fairly detailed account of the properties and functions of the gastric secretion. It is interesting to note that Beaumont took care to test comparatively the action of a measured amount of dilute hydrochloric acid by itself and a measured amount of the juice on the same quantity of boiled beef, and, finding that the juice completely dissolved the beef while the acid only turned it to "a jelly-like consistency," he drew the prudent conclusion that "probably the gastric juice contains some principles inappreciable to the senses or to chemical tests." In 1835, Schwann

proved the correctness of Beaumont's keen insight by demonstrating the presence of one of these "principles," the enzyme, pepsin. Rennin is perhaps another. And now the latest studies on pernicious anemia indicate yet another "principle" in the gastric juice, the nature of which is still obscure.

Although Beaumont did not note the nice relation between the mastication of sapid food and the flow from the stomach wall, which we recognize as "psychic secretion," he found that when "alimentary matter" is received in the stomach the juice exudes from its "proper vessels" and "increases in proportion to the quantity of aliment" (3, p. 85)—an observation quite in accord with the much later, more exactly quantitative studies of Pavlov.

No such elaborate examination of the temperature of the viscera has been undertaken by any other investigator as that conducted by Beaumont (cf. 3, p. 273). He read the thermometer introduced into the stomach during repose and after exercise, while the organ was empty and while digesting, when healthy and when inflamed, on days cold and days warm, and in all sorts of weather. It was his only fairly exact instrument and he used it fully. Exercise elevated the temperature, he found, an observation abundantly confirmed by more recent studies. And he was led to compare the effects of temperature on digestion *in ventriculo* and *in vitro,* when he noted that only if the gastric juice was kept warm did the process of chymification go on in a satisfactory manner. When the cold juice was warmed, however, "digestion commenced, and advanced regularly" (3, p. 152). He suggested that the accelerating influence of gentle exercise on gastric digestion might be due to the increase in temperature, for gastric juice "like other chemical solvents," he wrote, would have the rapidity of its action "increased in proportion to the elevation of temperature" (3, p. 94).

By comparing the course of digestion of food introduced in fine division and in coarse lumps into the stomach, and by similar experiments in glass vials, Beaumont was led to

lay emphasis on the importance of mastication, which he regarded as "absolutely necessary to healthy digestion." If meat in a large mass was passed through the fistula it underwent digestive changes much more slowly than if minutely divided. The quantity of the food likewise affected the speed of the digestive process. Although Beaumont made extensive and repeated observations on the time required for chymification of various foods (cf. 3, pp. 41-45, 269-272), and from these data drew the general conclusion that "*animal* and *farinaceous* aliments are more easy of digestion than *vegetable*," and although his tables of digestibility of different articles of diet have been generally regarded as an important contribution to practical dietetics, the absence of reference to the state of comminution of the foods, and especially the failure to state the amounts ingested, must be regarded as seriously affecting the reliability of the figures.

In connection with the study of the treatment of different food-stuffs in the stomach, there were incidental observations of some interest. One was the surmise that "the ultimate principles of nutriment are probably always the same, whether obtained from animal or vegetable diet" (3, p. 36). As Meek[4] has pointed out, it was not until the time of Emil Fischer that these words of Beaumont were proved to be significant and indicative of a prophetic shrewdness of reasoning. Another incidental fact noted by Beaumont was that fat or oily foods, "though containing a large proportion of the nutrient principles," are difficult of digestion, i.e., they remain long in the stomach. This observation is quite in accord with results of recent studies which have shown that fats retard the secretion of gastric juice, diminish the intensity and speed of peristalsis, and cause reflux of bile into the stomach—a phenomenon seen to occur in Alexis St. Martin (5, p. 115). Quite unlike "oily substances" are "*water, ardent spirits* and most other *fluids*"; they "are not affected by gastric juice, but pass from the stomach soon after they have been received" (3, p. 97). This observation, likewise, has received support in

relatively recent work. Cohnheim[6], in 1907, called attention to the rapid discharge of water through the pylorus, and assumed that it passes by way of the "Magenstrasse," a channel along the lesser curvature, directly from the cardia to the pyloric opening. All these confirmations of Beaumont's reports testify strongly to his skill and insight as an observer and to his exactness as a recorder.

With consideration of the handicaps under which he labored his description of the motions of the stomach is quite remarkable. He was able to identify "particular portions of the food" as he looked through the fistula, and by noting their movements and also the movements of a thermometer pushed various depths into the gastric cavity, and finding occasional resistance to its withdrawal, he came to the conclusion (3, p. 115) that

"the circular or transverse muscles contract progressively, from left to right [he speaks elsewhere of *peristaltic* motion]. When the impulse arrives at the *transverse band*, this is excited to a more forcible contraction, and, closing upon the alimentary matter and fluids, contained in the pyloric end, prevents their regurgitation. The muscles of the pyloric end, now contracting upon the contents detained there, separate and expel some portion of the chyme."

This is a quite exact account of the type of peristalsis seen in the human stomach, when the peristaltic wave is followed by systole of the antrum—an account all the more remarkable because so largely inferred from the behavior of the projecting end of a glass rod! The inference that the peristaltic wave normally reverses and that there is a circulation of the gastric content along the walls was not so happy, for X-ray examination of the stomach does not support it.

There remains to be considered Beaumont's testimony regarding certain conditions which may influence the digestive process. He noted that "severe and fatiguing exercise retards digestion" (3, p. 94). In 1911, Mantelli[7] likewise observed that exhausting labor is associated with failure of proper action of the gastro-intestinal tract—for an hour or two after strenuous muscular exertion the stomach does not respond normally to the presence of food. Again, Beaumont noted in St. Martin the participation of

the stomach in a general bodily disorder. Occasionally there was an abnormal appearance of the gastric mucosa accompanied by dryness of the mouth, thirst, exaggerated pulse, etc. Under these circumstances, he states, "no gastric juice can be extracted, not even on the application of alimentary stimulus . . . food taken in this condition of the stomach remains undigested for 24 or 48 hours, or more, increasing the derangement of the whole alimentary canal, and aggravating the general symptoms of the disease" (3, p. 108). Similar observations by recent investigators has paid tribute to Beaumont's sure vision. Alvarez[8] has cited autopsies on patients who have died of botulism, in whose stomach has been found food eaten many days before, when the trouble commenced. And similar stagnation of the gastric contents is often noticed in men and women suffering from tuberculosis and other infectious diseases.

Finally may be mentioned Beaumont's testimony to the profound influence of emotional disturbances on the secretion of gastric juice and on digestion. He had more than one occasion to see the phenomenon in St. Martin. Violent passion, he declared, is likely to cause a reflux of bile into the stomach, a change in the properties of the chyme, and a retardation or other disturbances of the chyme in its passage onward into the intestines (3, pp. 153-154). Fear and anger, he noted, check the secretion of gastric juice (3, p. 87). These relations between strong emotions and the inhibition of both gastric secretion and gastric discharge are fundamental not only for the physiology of the digestive canal but also for the clinical understanding of digestive disorders.

Such, then, are some of the more outstanding results of Beaumont's four years of research on St. Martin. There were, however, important indirect results. In 1843, a French investigator, Blondot, took the hint offered by the accident to the Canadian hunter, and began an experimental study of digestion by making an artificial gastric fistula in animals. At about the same time, and, it seems, quite

independently, Bassov, a Russian, did likewise. A few years later Claude Bernard also made use of the method for a variety of purposes. In 1876, toward the end of his career, Bernard[9] testified that Beaumont's researches had opened a new epoch in the history of our knowledge of the digestive processes. This judgment had been formed, however, much earlier, as proved by the following letter from W. G. Edwards, an American student in the Paris laboratory, who, in 1850, wrote to Beaumont in these words:

"The publication of your observation, exposing so clearly and analytically the physiology of the stomach, was the commencement of a new era in the study of this important organ and those associated with it. Your experiments are constantly imitated here upon animals, by a large number of investigating physiologists, among whom M. Bernard probably stands first. His discoveries . ... have rendered the functions of the pancreas, liver, etc., as clear as yours did those of the stomach, but his observations have necessarily been limited to animals, and in the absence of yours upon man would lose much of their value, since no other evidence exists of the identity of the process of digestion in man and the lower animals" (1, p. 289).

The use of the fistula method for examining the digestive functions reached its climax in the renowned researches of Pavlov and his school at Leningrad, that gave to Pavlov the Nobel prize. In his well-known treatise, "The Work of the Digestive Glands," Pavlov recognized the path-finding contribution of the pioneer American physiologist.

In closing may I be permitted to make a few general comments on Beaumont and his services to medical knowledge.

It is a phenomenon of arresting importance that some of the most valuable additions to science have been made by members of army medical corps. So long as he was engaged in research Beaumont belonged to that division of the United States Army. It was another member of the Corps, A. J. Myer, who "during his leisure hours at his isolated post" in New Mexico, devoted himself to devising a simple method of visual communication, which developed into the wig-wag system and the modern Signal Corps of the Army. Still another army medical officer, Walter Reed, carried on the investigations which have freed vast areas from the dread scourge of yellow fever. I need only men-

tion Ronald Ross, David Bruce, William Leishman and Laveran, to bring to your minds the striking fact that physicians in army service have made some of the most significant contributions to medical progress. How shall we account for this fact? Although the circumstances may never have been so unfavorable as they were at Old Fort Crawford, rarely have they included handy and well-equipped laboratories, libraries and stimulating atmosphere. Is it not possible that the essential condition that was provided was leisure—freedom from social and professional demands, from boards and councils, from commissions and committee meetings, from all manner of distracting obligations? You may outfit an investigator in a dusty garret or a dark cellar, you may pay him so little that he must live on simple fare and clothe himself in frayed garments, but if you provide him *time* he can advance his work. Take away time but give him all else in a manner *de luxe,* and he is useless. Necessity may be the mother of invention, Michael Foster once remarked, but "leisure is the mother of discovery." That leisure was the essential condition for Beaumont's success is indicated by a letter which he wrote April 16, 1833, after six weeks in New York City.

> "I have been unable to do much at accurate experiments and observations since I came here, so numerous and increasing are the calls of the curious, the social, the scientific and the professional . . . I am determined to do it [i.e., complete a series of studies] soon, however, if I even have to shut myself up with Alexis in a convent, or retire to some seclusion in the country. My official duties are very light, and would not interfere at all with my experiments, could I avoid the vexatious social intercourse to which I am perpetually exposed in this City. It is an unfavorable place for the pursuit of physiological inquiries and experiments" (1, p. 168).

No doubt the charge brought against the City of New York in 1833 could quite as justly have been brought against other large cities at that time. Laboratories have since provided the "seclusion" which Beaumont sought, but even their isolation may be endangered. It is time, free time, that must be assured, a proviso which Beaumont pathetically lost in the years of his active practice in St. Louis after leaving the Army.

Earlier in this address I referred to Beaumont, conducting his researches at Prairie du Chien, as being a frontiersman in two senses—in the dim region that lies between the known and the unknown, and in that advancing fringe of civilization whose movement westward has been one of the most romantic and stimulating aspects of our country's history. Observers of events have called attention to the disappearance of our geographical frontier. The boldness, resourcefulness, imagination, the hardihood and self-reliance, which pioneer life and its sudden hazards demanded, are said to be no longer requisite. And we are advised that we must settle down to the hum-drum of organizing our ways in rigid positions. Is not that prospect outlook, however, too superficial and too bleak? In one of his essays Samuel Crothers once remarked that there was no fixed line between the East and the West—it lay where the look changed from day-before-yesterday to day-after-tomorrow. In our laboratories the forward look of American pioneers is still possible and will continue to be possible for indefinite time to come. The frontier of knowledge is pushed forward with painful slowness, and always as new advance is achieved, new territory to be explored is freshly revealed. One can enter a laboratory, set to work, and in a short time see things quite as unexpected and thrilling, and perhaps more significant, than anything to be found by traveling to the earth's frigid poles. We may feel grateful that the attractions and excitements and rewards of pioneering are still provided in the realm of scientific research, and that the admirable virtues of the frontiersman are still serviceable in securing the advancement of knowledge.

Every community in the western sweep of American civilization had as a part of its history that heroic period when log cabins or sod huts, dangers from hostile savages, and hardships and privations, had to be endured. In the main the memories of those days of peril and hardihood have faded away. They have been displaced by the obvious development of cultivated farms, of organized cities, and

the establishment of schools and universities, made possible because of victory in the harsh struggle against the wilderness. Old Fort Crawford has disappeared, until no trace remains. The part it played in the westward migration of our people has been largely forgotten. But, as we have seen, the Fort served for a few years as a place where pioneering in science was carried on. That sort of pioneering is almost certain to make a persistent impression. Its results must be recorded in printed words. The words are lasting, and perhaps long afterwards the facts which they proclaim fit in with the facts obtained by others. Thus the firm structure of scientific truth is built. Though the Old Fort on the Upper Mississippi has vanished, the results of the experiments which Beaumont conducted within its walls have come down to us with undiminished lustre through these hundred years and are an enduring portion of America's gift to knowledge. "Truth, like beauty," Beaumont wrote, "when 'unadorned is adorned the most,' and in prosecuting these experiments and enquiries I believe I have been guided by its light." Such are the ideals of every frontiersman in science, and insofar as he lives up to them he leaves behind him, as Beaumont did in his book, permanent contributions from his fleeting years.

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GEORGE DAVID STEWART

A Tribute

The death of our confrère, Doctor Stewart, on March 9, 1933 was an inestimable loss to the Academy and brought deep sorrow to the members and to the entire medical profession. His friends find it hard to be reconciled to his passing away.

He was born December 28, 1862 on a farm at Malagash. This is a place on the coast of Northumberland Straits, Nova Scotia; farming and lumbering are the chief industries there. He was the eldest child of David and Mary Jane MacCallum Stewart, both natives of the province and of purely Scottish descent.

His father died before George was seven years old and he went to live with his grandfather Stewart on the old farm. He had a great love for his mother and his grandfather, and nearly every year to the last he went to visit there; he and his mother who still is living at the age of ninety-five, kept up an active correspondence through the years.

He had a strict religious bringing-up at home, based on Calvinistic tenets and Scotch Presbyterian Covenanter practice, devout and uncompromising. Religion was bred in him, line upon line it was woven into his character, became part of his culture. Its principles underly the serious decisions of his life. Yet this was not often openly manifest. He had no use for the "unco guid or rigidly righteous." He took some license in his speech but neither coarseness nor vulgarity was in him.

George Stewart had the "Psalms of David in Meter" by heart before he was ten and had committed to memory a great deal of the New Testament. At fourteen he had read extensively the Bible and The Pilgrim's Progress, Robert Burns and most of the English poets; probably from these his deep love of poetry developed. "Poetry is like music,"

he once said, "poetry is music and for that reason I always prefer rhyming verse, when possible, to blank measure." Poetry was always in the subconscious stratum of his brain.

When George David was fourteen he skipped away to be a sailor. After a few weeks he tired of this when "having pushed the old schooner for three days against the wind he found himself twenty miles behind where he had started," he felt it was no place for him, so he then and there resigned.

Back at school again, he soon obtained a teacher's certificate, and taught school for one or two terms. He then went to the Teachers' Training School at Truro graduating when he was twenty-one in 1884. In the fall of that year Mr. Stewart took charge of the High School at Antigonish. The Roman Catholic College of St. Francis Xavier is in this town; it is affiliated with the public school system of Nova Scotia, "a college superb in mathematics, the classics and theology." Here Mr. Stewart taught didactics and one or two other subjects, in return for which he had private lessons from the Rector, who later became Archbishop of Ontario.

In this period of his life those who impressed him most were his mother, his grandfather and a Professor Hall at the Normal School, "quite a remarkable man."

George Stewart himself was a man of marked individuality, a sensitive man, quick to see and quick to feel and temperamental to a degree. He had a receptive mind, he developed a very retentive memory and he enjoyed intellectual pursuits. Living among a people strong for education it then seemed likely that he would continue to follow teaching as a profession. He had no thought of studying medicine until he was at the High School.

Here at Antigonish he had the good fortune to meet and to become intimately acquainted with the man who had most to do in shaping his career, Doctor William Henry Macdonald, a practitioner known and loved far and wide throughout that country for his skill and understanding. He was twice Stewart's age. He had a good classical edu-

cation, he was very familiar with Latin and Greek, had a reading acquaintance with French and German, and kept himself posted in current news and literature—altogether an exceptional man and practitioner much ahead of his country colleagues. Doctor Macdonald was a graduate of Harvard Medical School, 1862. Young Stewart rode out with him often on his rounds into the country after school hours and on week-ends and they were fast friends for thirty years until Doctor Macdonald's death in 1915. George had many of his anecdotes and stories from Doctor Macdonald.

This close association and friendship turned Stewart to medicine, but strange to say, he matriculated not at Harvard but at Edinburgh. However, he did not go to Edinburgh. In fact it was late in life before he ever crossed the ocean. Several reasons, among them distance and financial considerations, made him change his plans, and the reports of one or two of his friends who had just returned as graduates of Bellevue, who spoke in high terms of the courses there. Considering these things and that New York held greater opportunities than Edinburgh, he came to Bellevue Hospital Medical College in 1886, was graduated in 1889 and by October, 1890 he had completed his interneship on the Third Surgical Division of the hospital.

He had now another serious matter to decide. Doctor Bryant and Doctor Dennis were the active surgeons on the Third and Doctor Charles Phelps on the Fourth Division and all three were at St. Vincent's; Bryant was professor of anatomy and Dennis of surgery at the College. Through these men of prominence rare opportunities in New York were presented. Stewart wanted to remain in New York. Nevertheless he had promised his friend John McKay (M.D. Bellevue '86), to take his practice in New Glasgow, a coal-mining town in Pictou, Nova Scotia, while McKay went to Edinburgh for a postgraduate course and, being a man of his word Stewart did so and was gone about a year. During this year in Nova Scotia he married Miss Ida M. Robb of Antigonish. On his return to New York he

established himself in an office on Lexington Avenue near Thirtieth Street.

He was now in his thirtieth year, had had considerable experience in practice and he was a certified teacher; with these qualifications all he needed was hospital and college opportunities. These he soon obtained, indeed it was a tentative promise of this kind that justified him in coming back. Professor Bryant made him one of the prosectors of anatomy, an arduous job which has its immediate reward in the satisfaction from hard work well done. In 1892 he was made assistant demonstrator, and in 1897 he rose to the full professorship. This steady and rather rapid advance was due entirely to his own industry and merit. He had great ability and force as a teacher of anatomy, especially in its practical applications, and he made the subject attractive and useful to the student not spending hours and hours on one aspect of the subject for example; he had a full sense of the relative value of things.

At the time he became demonstrator he was appointed assistant visiting surgeon to Bellevue and soon afterward to St. Vincent's Hospital. He assisted Doctor Dennis in private practice for a while. It was at these two institutions subsequently where practically all of his operative work was done and he became a dominant force at each.

Doctor Stewart held the chair of anatomy and clinical surgery in the medical school until the resignation because of ill-health of Doctor B. Farquhar Curtis, the professor of the principles of surgery and clinical surgery in 1909, when he took up the duties of that chair and on the death of Professor Bryant in 1915 he succeeded to the professorship of surgery.

He had a real genius for teaching, it was a talent already shown before he became principal of the High School at Antigonish. A successful teacher must first have a firm grasp of his subject and, as he truly said: "the teacher must have a sympathetic understanding of the student; he must be able to exchange places with him; must not only know

but feel his point of view." George Stewart had this intuitive insight of the workings of a student's mind—and a wonderful control over his classes of medical students. There was nothing prosaic nor dull—no bluster; he knew when to be serious and when tolerant. Even so he was at times irascible and testy—not easy-going when the going was really easy but had always the support and approbation of the class.

The re-awakening of late of interest in the history of medicine and medical biography, did not strike our friend with the full force of a new idea; he had for years emphasized the importance of this, and due respect to tradition appealed to him. Becoming professor of surgery, he inherited the Saturday surgical clinic at Bellevue, a clinic which brought to him memories of Valentine Mott and Wood, of Van Buren, Hamilton and Sayre; echoes of Lister and MacCormac and other celebrities who had operated in that amphitheater and of Gorgas and Walter Reed and the host who had sat upon the benches. That the large general operative clinic occupies a less prominent place in the present-day curriculum he well understood and he was generally in accord with the modern methods, nevertheless he took just pride in this inheritance. The general style of his conduct of this clinic recalled the former days, linked him with the past and the past was never far below his horizon.

He prepared himself for each lecture and students were assigned an active part to take. His operative dexterity and shrewd and forceful running comments attracted large audiences and often he invited surgeons of note to address the class.

Doctor Stewart was one of the most influential and resourceful members of the medical board in advancing Bellevue's status as a great center of hospital public service and educational activity. The executive committee of the board is a representative intercollegiate committee with interdependent function in the conduct of educational

affairs of the hospital and in maintaining adequate cooperation with the City authorities.

The American Red Cross Base-Hospital Unit No. 1 was assigned to Bellevue in 1916. Doctor Stewart supervised the organization of the unit and under his leadership the medical and surgical staff and the enlisted men were recruited; the nursing staff, by the training school. Before the unit was taken over by the War Department, Doctor Stewart resigned. These were full years for everybody, full of the worries and anxieties of war, the trials and suffering of epidemic influenza, confusion and disruption of hospital services. There was plenty of active work for him on the Medical Advisory Board and the Headquarters Council of Defense.

When the American College of Surgeons was formed in 1913 Doctor Stewart became one of the charter members, the aims and purposes coinciding with his own. He was elected to membership in the American Surgical Association in 1915.

In the fall of 1918 George David Stewart was elected president of The New York Academy of Medicine, and when he was installed in office on January 2, 1919, he entered upon a new stage in his career and a new era in the history of the Academy began. He had just passed his fifty-sixth birthday and was in good health and vigor of body and mind. He followed Doctor Walter James in office who, under very trying conditions due to the war, had been a capable and farseeing administrator. George Stewart had a "haunting fear" of proving to be an unworthy successor; he was quite conscious of the responsibilities. He had already served as vice president for three years and was therefore well-informed regarding the urgent needs of the Academy and the various plans and projects for the future growth of the Academy, but he did not see that the inherent possibilities could be developed or reached very soon. Stewart had the unusual honor of being elected three times to the presidency but before the end of his first term he became convinced that the time to press on for the full com-

plete development was the present—so with characteristic determination he began the work.

A full account of this work written by one of the most active participants, Doctor D. Bryson Delavan is printed in the Bulletin of the Academy (2d series vol. 3, 1927, pp. 675-706). Doctor Delavan writes: "To Dr. George David Stewart" ". . . is due the credit of having inaugurated the effort which, carried on by him with unfaltering energy and courage through six arduous years, finally resulted in the Academy of Medicine as we have it today". It must be said here however, that no one more than Doctor Delavan himself stimulated, prodded, and encouraged Doctor Stewart in this great undertaking—for with all Stewart's tenacity he needed this.

The Academy is a lasting and superb monument to all those who, by their vision, energy and devotion accomplished it. Doctor Stewart did not give up his work in and for the Academy. He served on the Board of Trustees from the end of his presidency 1925 till his death and for a while as a member of the Public Health Relations Committee. It is scarcely possible to exaggerate the value of the service rendered The New York Academy of Medicine by Doctor George David Stewart.

The experience of these years had a perceptible effect on Stewart. It broadened him out; he became more public-minded; he addressed larger audiences and concerned himself more with the relation between medical education and public welfare. He became better known both locally and nationally. In 1927 when he was elected president of the American College of Surgeons his inaugural address was in the nature of an essay on "Idealism in Medicine." Again, on retiring from that office he spoke on "Aims and Ideals", a short sermon, more in the concrete, meditating on the way the College had lived up to *its* ideals and had striven to uphold surgical standards.

Meanwhile his interest and active participation in undergraduate teaching continued unabated, indeed he

maintained his college schedule in ward, class-room and clinic until the onset of his last illness.

As to "Aims and Ideals":—Doctor Stewart's own aims and purposes were not visionary. His conception of the principles of education for the medical student was clear and definite and practical. Teaching was his forte. When he retired from the presidency of the Academy of Medicine in 1925 he said: "It is to be hoped the Academy will never undertake the teaching work that properly belongs to the university," meaning undergraduate teaching for he was mostly interested in that. He pointed out that the medical profession may pursue its education after graduation in the academy or lyceum.

There was a good deal of discussion going on about who and what constitutes a specialist, and the very definite need of defining this term. In 1921 a system of postgraduate education and training in advanced surgery under a special faculty was elaborated and inaugurated at the University and Bellevue Hospital Medical College by members of Professor Stewart's corps of assistants and with his acquiescence though he took on little of the work himself. The course requires three hours of work daily for two years and a half and is limited to those who have completed surgical interneships in accredited hospitals.

Five years ago the undergraduate students presented to the College a splendid testimonial of the admiration and esteem they felt for their teacher and friend. It is a portrait bust in bronze of Professor Stewart, the work of Mrs. Jules Leon Butensky, the talented sculptor, one of whose works, "Universal Peace", is in the Museum of Art in this city. The bronze (23x22x13 inches) presents a vivid, full-front-portrait, the face composed and set on futurity. It is the gift of the four classes, 1928, 1929, 1930, and 1931, and was presented in the lecture hall of Carnegie Laboratory, April 18, 1928—a gala and memorable occasion, mutually affecting and deeply significant. The bronze is a lasting proof to all alumni of the reciprocity in sentiment that existed between the students and Professor Stewart.

Doctor Stewart had an active surgical practice as consultant and a private clientele as well. He had many patients who were loyally devoted to him. The friendship that existed between Mr. George F. Baker and George David Stewart was a real attachment. Through sickness and health, through thick and thin, withstanding many tiffs, it was a friendship that remained steadfast and true. It was this high regard for Doctor Stewart that induced Mr. Baker to give one hundred thousand dollars toward the building of the new Academy of Medicine. He was the largest individual contributor, and beyond all this, such was Mr. Baker's admiration for the personal character of George Stewart and the merit of his accomplishments that he gave the sum of one million dollars to endow the George David Stewart Professorship of Surgery in New York University and Bellevue Hospital Medical College. So large a gift for one Chair is incomparable to anything in the history of medical schools in this country.

Reviewing the outstanding events of George Stewart's life, it is clear that the seafaring career was no place for him. If he had continued to follow the teaching profession he certainly should have reached a prominent place in that calling for it was so congenial to him.

Medicine however was his true sphere, and his decision to come to New York to enter it was of the greatest consequence in shaping his fortune. Had he gone to Edinburgh he would have studied under very notable teachers: William Turner in anatomy, William Rutherford in physiological chemistry and the institutes of medicine, William Greenfield in pathology, John Chien in surgery, T. Grainger Stewart in clinical medicine and Alexander Simpson (nephew of Sir James Y. Simpson) in midwifery. Probably he would have returned to Nova Scotia, which would have been a great gain to the medical profession there but a great loss here in this country.

Doctor Stewart's first contributions to surgical literature were made in 1895 when he presented two patients with

reports before the Society of Alumni of Bellevue Hospital, one, a boy he had operated upon five years previously when house surgeon in Bellevue, taking a bean from the right bronchus which became dislodged from the trachea during tracheotomy for its extraction (*Trans. Soc. Alumni Bell. Hosp.* 1894-95, p. 124, and *New York Med. Jour.* vol. 62, p. 26, July 6, 1895). He made two more clinical reports in 1898 before the same society. Then in 1905 he edited with annotations a translation of Prof. Oscar Schultze's Atlas and Text-Book of Topographic Anatomy (Phila., Saunders, 1905, quarto, 189 pp. 22 pl.), a book that "contains the essentials of regional anatomy and omits the exceptional or relatively unimportant details." He wrote for Bryant and Buck's American Practice of Surgery the articles on Torticollis (vol. 4), on the Surgery of the Pancreas and on the Surgery of the Liver, Gall-bladder and Biliary Passages (vol. 8) published in 1908 and 1911 respectively.

In 1914 in association with Dr. William H. Barber he reported an experimental study of "Hydronephrosis" (*Ann. Surg.* vol. 60, p. 723, 1914) and with the same collaborator on "Gastric Hypermotility" (*Jour. A.M.A.* vol. 73, p. 1817, 1919) and "Further Observations upon Reflex Gastric Hypermotility" (*Proc. Soc. Exp. Biol. and Med.*, vol. 17, p. 155, 1919-20). Between 1905 and 1922 he published seventeen articles on clinical surgery, eight of them in 1908. His writing is distinguished by conciseness and simplicity. He had not a high opinion of much that appears in either medical or surgical literature. Besides these and several formal addresses his writing was in biographical, historical or poetical form. To the students' year-book at the College called the "Bellevue Violet" he was often a contributor. One of his best articles is a reminiscent account of "The "Saturday Clinic." His tribute to "Doctor Herman Haubold", his classmate and friend of long standing, is very fine—a just and loyal estimate of Haubold which exemplifies the emotional sympathy that characterized them both.

George Stewart had a great fondness for things outside his profession. He believed that a man who has this is likely to have a much more interesting life and perhaps not be the worse doctor. He was a devoted lover of Robert Burns, not because of his race but for his poetry. He was a member of the Robert Burns Society of New York and ten years ago he became president and made the address at the banquet on the anniversary of the birthday of "Scotia's Immortal Bard" amid toasts and song and skirl of bagpipes.

Stewart had a poetic fancy himself and composed rhymes and verses of considerable merit both serious and gay. Two of these are of piscatorial origin: "The Clicking of the Reel" and "Don't Cut the String" for Stewart was expert at salmon fishing—his greatest sport. For a number of years he fished the waters of the Quebec Labrador and several men of prominence in financial and industrial life were his companions very often—the most notable, his truly devoted friend the late Mr. George F. Baker. The incident that inspired "Don't Cut the String" happened with the late James J. Hill of railroad fame, a man of great pluck and tenacity. Perhaps the range of Doctor Stewart's interest, his sentiment and humor may be shown by some other titles: "The Road", "Pardon", "The Tired Doctor's Prayer", "Again", "On Receiving a Beautiful Cane from Paris, the Handle Contributed by a Rhinoceros", "Bill McKeever's Soirée". These are published in the proceedings of the Charaka Club, 1931.

His reading covered a wide range of subjects. At the age of sixty-four he began the study of Italian and pursued it so assiduously and enthusiastically that within three years he was able to speak the language fluently and he enjoyed its classics in the mother tongue.

He joined the Society of Alumni of Bellevue Hospital in 1890 and then the Hospital Graduates' Club where those other traits that distinguished George Stewart and that were so attractive in him, began to show, his congeniality, his humor and heartiness and fraternal spirit. It was not long before he had acquired a reputation as a good

raconteur; the wit and point of his Scottish stories and "in the Doric" as he called it, his easy, colloquial style made him very popular. He really enjoyed the exercise of this rare talent and put a good deal of thought and energy into it. This became rather exacting at times, for his speeches, even his extemporaneous speeches, were practically all prepared. He has been known to have three speeches in his pocket at the same time and to decide which to deliver when he had sized-up his audience. He excelled too, as a toastmaster and often put life into what otherwise was a dull party. He was hard to match as an after-dinner speaker.

Some time ago in talking about the life and character of the general practitioner as a guide and counsellor and his status at the present day, it was remarked that with all the advances in medical science and the changes in practice that he had seen, the personal relation of doctor and patient remained the same, based on the same ethical standards and trust in each other, and he said: "I think I would have made a good doctor," thinking of Doctor William MacLure in "Beside the Bonnie Brier Bush," whom he often quoted, and of his own preceptor William Macdonald. Doctor Stewart, a leader in the profession, in his every-day work and practice lived up strictly to these principles. Punctilious sometimes in non-essentials yet his friends and associates always knew where he stood in things that mattered. He had the very able and loyal support of his staff and he was happy in the knowledge of it. His successor in the professorship of surgery is his able and devoted colleague for many years, Doctor Arthur Mullin Wright.

His presidency of the Academy of Medicine is a notable landmark in the life of Doctor Stewart; it had a marked influence upon himself and his administration of that office was of vital importance in the development of the new Academy, and will never be forgotten.

In 1921 New York University conferred upon him the degree of LL.D., and in 1929 the same degree was given him by Dalhousie University in Nova Scotia.

Mrs. Stewart survives her distinguished husband together with four daughters and five grandchildren.

George David Stewart by his professional attainments, his force as a teacher, his high ideals, the quality of his personality, occupied a place of international prominence and importance, not only in the minds but in the hearts of his fellows in the brotherhood of doctors.

It will be long before we see his counterpart.

ROBERT JAMES CARLISLE

COMMITTEE ON FELLOWSHIP

The Committee on Fellowship held a meeting on September 19th to continue its work of studying the applications of existing Fellows of the Academy for classification as specialists. The names considered at this meeting will not be acted upon by the Council of the Academy until October 25th.

There are nearly 500 names to be passed upon and many applications have not been considered on account of the need of establishing precedents, the interpretation of the By-Laws, and the occasional absence of a member of the Committee. The Committee has therefore asked me to have this notice inserted in the Bulletin so that those Fellows whose names have not yet been considered will not be concerned by the delay.

EDWARD L. KEYES, *Chairman*
Committee on Fellowship

Fellows Designated As Specialists

The following list consists only of those Fellows of the Academy who have been accepted by the Committee on Fellowship at the meeting of September 19, for designation as specialist in their various fields and await the approval of the Council.

Dermatology and Syphilology
George Morris Lewis

Surgery
Milton R. Bookman — Preston A. Wade

Neurology and Psychiatry
Samuel Bernard Wortis

Pediatrics
Camille Kereszturi — Sidney D. Leader

Ophthalmology
Norton DeL. L. Fletcher — J. Flandreau Van Fleet

Otolaryngology
H. Griffin Bullwinkel — Frank C. Carr — H. Clifton Luke
Gervais Ward McAuliffe — Charles Osgood — William A. Randel

Internal Medicine
Helen Baldwin — Frank Terry Brooks — Irving S. Wright

Urology
George A. Cashman — Victor C. Pedersen

Obstetrics and Gynecology
Ralph A. Hurd — Harry P. Mencken — Nelson B. Sackett

Radiology
John J. Masterson — Henry K. Taylor

Orthopedic Surgery
Samuel W. Boorstein

RECENT ACCESSIONS TO THE LIBRARY

Armstrong, C. P. 660 runaway boys.
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Phil., Lippincott, [1933], 242 p.

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Howell, W. H. A text-book of physiology. 12. ed.
Phil., Saunders, 1933, 1132 p.

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Lagrange, H. & Delthil, S. Les conjonctivites de nature anaphylactique.
Paris, Doin, 1932, 70 p.

Lewis, (Sir) T. Clinical disorders of the heart beat. 7. ed.
London, Shaw, 1933, 127 p.

Löwe, F. Optische Messungen des Chemikers und des Mediziners. 2. Aufl.
Dresden, Steinkopff, 1933, 205 p.

Pavlov, I. P. Vorlesungen über die Arbeit der Grosshirnhemisphären.
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Price-Jones, C. Blood pictures. An introduction to clinical haematology. 3. ed.
Bristol, Wright, 1933, 72 p.

Price-Jones, C. Red blood cell diameters.
London, Milford, 1933, 82 p.

Ramón y Cajal, S. Histology . . . Translated from the 10. Spanish edition.
Balt., Wood, 1933, 738 p.

Rose, R. H. How to stay young.
N. Y., Funk, 1933, 195 p.

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St. Albertus-Magnus-Festschrift.
[Freiburg in der Schweiz: St. Paulusdruckerei, 1932], 304 p.

Singer, G. Praxis der unspezifischen Diabetesbehandlung.
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Transactions of a commemorative meeting in honour of Dr. John Edmund MacKenty.
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Balt., Wood, 1933, 420 p.

DEATHS OF FELLOWS OF THE ACADEMY

Byrd, Charles Wise, M.D., 121 East 60 Street, New York City; graduated in medicine from the Medical College of Virginia, in 1909; elected a Fellow of the Academy May 2, 1929; died, September 14, 1933. Dr. Byrd was a member of the County and State Medical Societies. He was a member of the New York Otological Society, and Surgeon in the Oto-laryngological department at the Manhattan Eye, Ear and Throat Hospital.

Dixon, George Arthur, M.D., Paris, France; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1878; elected a Fellow of the Academy March 6, 1884; died, October 14, 1933.